

REMARKS

Applicants appreciate the Examiner's thorough consideration provided the present application. Claims 1, 2, 4, 6-10 and 12-16 are now present in the application. Claims 7 and 9 have been amended. Claims 1 and 9 are independent. Reconsideration of this application, as amended, is respectfully requested.

Interview With The Examiner

An interview was conducted with the Examiner in charge of the above-identified application on April 4, 2006. Applicants greatly appreciate the courtesy shown by the Examiner during the interview.

In the interview with the Examiner, Applicants' representative presented arguments with regard to the applying step as recited in claim 1 and the resonator as recited in claim 9 in view of Nagato, col. 13, lines 12-41. However, no agreement was reached.

Reasons For Entry Of Amendments

As discussed in greater detail hereinafter, Applicants respectfully submit that the rejections under 35 U.S.C. § 103 are improper and should immediately be withdrawn. Accordingly, the finality of the Final Office Action mailed on January 24, 2006 should be withdrawn.

In addition, the amendments to claim 7 are simply made to address the Examiner's objection. Furthermore, claim 9 has been amended to include features previously presented in claim 1. Therefore, the claim amendments should not raise any new issue.

If the Examiner persists in maintaining his rejections, Applicants submit that this Amendment was not presented at an earlier date in view of the fact that Applicants are responding to a new ground of rejection set forth in the Final Office Action. In accordance with the requirements of 37 C.F.R. §1.116, Applicants respectfully request entry and consideration of the foregoing amendments as they remove issues for appeal.

Claim Objections

Claim 7 has been objected to due to the presence of minor informalities. In view of the foregoing amendments, it is respectfully submitted that this objection has been addressed. Accordingly, this objection has been obviated and/or rendered moot. Reconsideration and withdrawal of this objection are respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 2, 4, 6, 9, 10 and 12-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over von Gutfeld et al., U.S. Patent No. 6,055,035 (hereinafter “Gutfeld”), in view of Nagato et al., U.S. Patent No. 5,619,234 (hereinafter “Nagato”). Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gutfeld in view of Nagato, and further in view of Masazami et al., U.S. Patent No. 6,331,884 (hereinafter “Masazami”). These rejections are respectfully traversed.

Complete discussions of the Examiner’s rejections are set forth in the Office Action, and are not being repeated here.

In light of the foregoing amendments, Applicants respectfully submit that these rejections have been obviated and/or rendered moot. While not conceding to the Examiner's rejections, but merely to expedite prosecution, as the Examiner will note, independent claim 9 has been amended.

Independent claim 1 recites a combination of steps including "applying an on voltage to a resonator during emitting of the liquid crystal material to generate a vibration so as to apply a pressure to the projecting portion to emit the liquid crystal material from the projecting portion."

Independent claim 9 has been amended to recite a combination of elements including "a resonator for generating a vibration upon application of an on voltage to the resonator during emitting of the liquid crystal material" and "a resonating plate located between the resonator and the projecting portion for transmitting the vibration to the projecting portion so as to apply a pressure to the projecting portion to emit the liquid crystal material from the projecting portion."

Applicants respectfully submit that the combinations of steps and elements as set forth in independent claims 1 and 9 are not disclosed or suggested by the references relied on by the Examiner.

Applicants respectfully submit that one skilled in the art would not have the motivation to modify Gutfeld's LCD deposition apparatus 20 in view of Nagato. In particular, Gutfeld discloses that the LCD deposition apparatus 20 includes a LC source 23 and a nozzle fixture 21 (see FIG. 2A). The nozzle fixture 21 is coupled to *a pressurized LC source 23* for feeding the LC material to the small holes 22 and out to the panel plate 1A (see FIGs. 2A and 2B). In other words, the pressure is already applied to the LC source 23 in Gutfeld. However, Nagato's piezoelectric element and pulse generator 45 apply the pressure on the ink-ejecting portion.

Since the pressure is applied to the LC source 23, one skilled in the art would not have the motivation to apply a varying pressure (sometimes positive and sometimes negative depending on the level of the pulse) to the nozzle fixture 21 because it will interfere with the pressure applied to the LC source 23 so that the LC material would not be uniformly emitted.

In the alternative, one skilled in the art would not have the motivation to apply Nagato's piezoelectric element and pulse generator 45 to Gutfeld's nozzle fixture 21. In particular, the piezoelectric element, when applying the pulse, would bend inwardly. By applying the piezoelectric element on Gutfeld's nozzle fixture 21, the nozzle fixture 21 would have to deform. According to the Examiner position, the piezoelectric element will repeatedly deform and restore to its original position. In other words, Gutfeld's nozzle fixture 21 would also repeatedly deform and restore to its original position. However, as shown in FIG. 2B, Gutfeld's nozzle fixture 21 is hung by and connected to the LC supplying pipes at two sides of the nozzle fixture 21. With repeat deformation and restoration, it would significantly damage or break the junction between the supplying pipes and the nozzle fixture 21. In addition, the repeat deformation and restoration of the nozzle fixture 21 would make the nozzle fixture 21 unstable, which would cause to deposit the LC material to an undesired location. Therefore, Nagato actually teaches away from making the modifications to Gutfeld as suggested by the Examiner and one skilled in the art would not have the motivation to apply Nagato's piezoelectric element and pulse generator 45 to Gutfeld's nozzle fixture 21.

In the alternative, even if Gutfeld and Nagato were combinable, assuming *arguendo*, the combination of Gutfeld and Nagato would still fail to teach the features of claims 1 and 9.

Nagato in col. 13, lines 17-31 discloses that when a pulse is supplied to it, the piezoelectric element 43 bends inwardly, deforming the substrate of the ink-holding section 44 inwardly. A pressure is thereby exerted on the ink contained in the section 44, forming an ink meniscus. The ink meniscus grows into an ink droplet. Although Nagato discloses that the ink droplet is ejected forward from the slit 42, *the ink droplet is not ejected from the slit 42 by the applied pressure, but by the electric field between the electrostatic image formed on the recording medium and the counter electrode 41* (see Abstract).

In particular, Nagato discloses that the ink-ejecting slit 42 has a plurality of counter electrodes 41 (see FIG. 8; col. 13, lines 12-15). Nagato also discloses that ink ejecting slit 42 is similar to its counterpart of Embodiments 1-4 as shown in FIGs. 1-7. As disclosed in Embodiments 1-4 in FIGs. 1-7 and col. 8, line 22- col. 12, line 67 of Nagato, the recording head 3 applies a voltage on the surface of the pyroelectric layer 22 or dielectric layer 25, which will form an electrostatic latent image on the recording medium 2. In addition, a pulse voltage of reverse polarity will be applied to the common electrode 14 (and to the counter electrodes 15, which are connected to the common electrode 14) in synchronization with the pulse voltage supplied to the recording head 3. Because of the electric field between the electrostatic image formed on the recording medium 2 and the counter electrodes 15, the ink droplets are ejected through the slit toward the surface of the recording medium 2, on which the electrostatic latent image has been formed. Nagato also discloses “it is the *electrostatic latent image on the recording medium that determines whether to eject ink or not*” (see col. 7, lines 55-57; emphasis added).

In other words, *the pressure generated by the piezoelectric element 43 is simply used to grow the ink droplets, but will not eject the ink droplets*. Since the electrostatic latent image on the recording medium determines whether to eject ink or not, by *simply applying the pressure alone* without the electric field between the electrostatic image formed on the recording medium and the counter electrodes, *the ink droplets will not be ejected*. Therefore, Nagato fails to teach “applying an on voltage to a resonator during emitting of the liquid crystal material to generate a vibration so as to *apply a pressure to the projecting portion to emit the liquid crystal material from the projecting portion*” as recited in claim 1 and “a resonator for generating a vibration upon application of an on voltage to the resonator during emitting of the liquid crystal material” and “a resonating plate located between the resonator and the projecting portion for transmitting the vibration to the projecting portion so as to *apply a pressure to the projecting portion to emit the liquid crystal material from the projecting portion*” as recited in claim 9.

With regard to the Examiner’s reliance on Masazami, this reference has only been relied on for its teachings related to some dependent claims. This reference also fails to disclose the above combinations of steps and elements as set forth in independent claims 1 and 9. Accordingly, this reference fails to cure the deficiencies of Gutfeld and Nagato.

Accordingly, none of the references relied on by the Examiner individually or in combination teach or suggest the limitations of independent claims 1 and 9. Therefore, Applicants respectfully submit that independent claims 1 and 9 and their dependent claims (due to their dependency) clearly define over the teachings of the utilized references.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103 are respectfully requested.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently pending rejections and that they be withdrawn.

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of one (1) month to May 24, 2006 in which to file a reply to the Office Action. The required fee of \$120.00 is enclosed herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By Esther H. Chong
Esther H. Chong
Registration No.: 40,953
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant